

Nocturnal Enuresis Clinical Management Tool (CMT)

This tool and additional educational resources can be found at www.stopbedwetting.org

Nocturnal Enuresis Clinical Management Tool

Why this management tool?

1. The aim of this tool is to use a simple questionnaire and non-invasive screening, leading to a rational approach to diagnosis.
2. This tool is designed to help ensure that treatment choice is informed by robust information on the underlying pattern and cause of wetting, as this influences the probability of success with a given treatment.
3. The tool is meant to complement, not replace, good clinical practice whereby the child and family's views, attitudes, circumstances and preferences are central to agreeing a management strategy.
4. By selecting treatments based on a correct diagnosis and categorisation, treatment failures should be reduced.

Limitations of the tool

1. Not all patients fit neatly into one or other category.
2. Some patients will have combinations of characteristics.
3. Even when correctly classified, treatment success is not guaranteed!
4. The non-invasive assessments may be too burdensome for some families to undertake.
5. Major psycho-social factors or strong patient preferences will be powerful determinants of management strategy.

Bladder Diary

A diary is only as good as the information it contains! The longer the monitoring period and the more detailed the records the better.

The information gained from the bladder diary and history should allow a good preliminary evaluation^(2,3).

Confirm:

Night-time wetting

- How many nights a week does bedwetting occur?
- How many times a night does bedwetting occur?
- Does there seem to be a large amount of urine?
- At what times of night does the bedwetting occur?
- Does the child or young person wake up after bedwetting?

Exclude:

Daytime wetting
Frequency / urgency
Constipation/soiling

Urine frequency volume and fluid intake*

International Children's Continence Society (ICCS) currently recommends full monitoring of urine output and fluid intake, including timings and volumes for a minimum of 2 days. Daytime and night-time voiding frequency should be assessed and calculations, made for total urine output, average voided volume and maximum voided volume⁽²⁾.

Nocturnal urine volume

ICCS currently recommends monitoring overnight urine volumes for 7 days⁽²⁾.

Volume = urine produced during the night (sleep), plus the first morning urine immediately after waking.

If the child wears nappies/pull ups, volume may be measured (weight gain (g) = volume (ml)) by weighing the night time nappy.

Night-time wetting

ICCS recommends monitoring the number and timing of wet episodes and waking at night for 14 nights⁽²⁾.

Do all patients need to be monitored for nocturnal polyuria?

The measurement of nocturnal urine production is helpful in reaching an accurate diagnosis and to demonstrate to the child and parent the nature of the problem⁽²⁾.

In a previously untreated child with no other symptoms, it may be reasonable to rely on the clinical signs of nocturnal polyuria rather than actually measuring it, particularly if they are reluctant to use pull-ups⁽²⁾.

*Fluid intake – including volume/when/type/of fluid

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Patient Name:.....Date of birth:...../...../.....

Diagnosis	Yes	No	
1. Nocturnal Polyuria			Expected Bladder Capacity from 2 to 12 years old: $(\text{Age} \dots \text{yrs} + 1) \times 30 = \dots \text{mls}$ Average Nocturnal urine output (on wet nights) = $\dots \text{mls}$
Measured urine output is high			
<i>If nocturnal output cannot be measured</i>			
Wet soon after falling asleep			
Consistently large wet patches			
2. Bladder storage disorder			
Small measured bladder capacity			Maximum voided volume = $\dots \text{mls}$
Urinary frequency			\dots voidings per day
Daytime wetting			\dots wettings per day
Urgency			
3. Bladder emptying			
History of abnormal voiding			
History of not emptying bladder completely			
History of UTIs			
Abnormal investigations			
Constipation			
4. Negative Screen			None of factors 1 to 3 apply
5. Mixed Screen			Both nocturnal polyuria and bladder storage disorder are present
Other factors affecting management	Yes	No	
A. Co-existing conditions			
Behavioural / Emotional Disorder			
Autistic Spectrum Disorders, ADHD			
Moderate / Severe learning problem			
B. Factors favouring alarm			
Negative views of medication			
Arousability: Child relatively easy to wake			
Home circumstances suitable for alarm			
C. Factors favouring medication			
Negative views of alarm			
Need for rapid response			
Home circumstances unsuitable for alarm			

Completed By..... Date...../...../.....

Nocturnal Enuresis Clinical Management Tool - Notes

Complete a Frequency – Volume Fluid Chart and exclude constipation first

Diagnosis	Yes	No	
1. Nocturnal Polyuria			Expected Bladder Capacity from 2 to 12 years = (Age in years+1) x 30⁽¹⁾ From 13 years of age, Expected Bladder Capacity = 390mls ⁽²⁾
Measured urine output is high ⁽²⁾			Average Nocturnal urine output (on wet nights) =mls
If nocturnal output cannot be measured			Nocturnal polyuria is defined as an overnight urine output of more than 130% of the Expected Bladder Capacity ⁽²⁾ . Nocturnal polyuria may, in some children, be the result of undesirable drinking patterns ⁽¹⁾
Wet soon after falling asleep ⁽⁴⁾			
Consistently large wet patches ⁽⁴⁾			
2. Bladder storage disorder			If symptoms indicate consider the need for a bladder scan to confirm bladder emptying prior to medication
Small measured bladder capacity ⁽²⁾			Maximum voided volume measured over several days is at least 35% less than expected bladder capacity for age ⁽²⁾
Urinary frequency ^(2,3)			8+ voidings per day in presence of a 'normal' fluid intake ⁽²⁾
Daytime wetting ^(2,3)			Quantify the wetting as damp (pants only), wet pants, (including patch on clothes) or wet clothes (with puddle on the floor) ⁽¹⁾
Urgency ^(2,3)			Inability to postpone micturition, posturing, urge incontinence ⁽²⁾
3. Bladder emptying			The need for specialist evaluation should be considered for all children with bladder emptying disorder
History of abnormal voiding ⁽¹⁾			Infrequent voiding, abdominal straining, intermittent or poor stream, prolonged voiding ⁽²⁾
History of not emptying bladder completely ⁽¹⁾			Evidence /suggestion of residual urine
History of UTIs ^(1,3)			Assessed according to local (NICE) guidelines
Abnormal investigations ⁽²⁾			Post-void residual > 20 ml, abnormal uroflow, bladder or renal ultrasound ⁽²⁾
Constipation ^(1,3)			In isolation, constipation insufficient to diagnose a bladder disorder and should always be treated ⁽¹⁾
4. Negative Screen			None of factors 1 to 3 apply
5. Mixed Screen			Both nocturnal polyuria and bladder storage disorder are present
Other factors affecting management	Yes	No	
A. Co-existing conditions			
Behavioural / Emotional Disorder ^(1,3)			These factors are more often associated with bladder emptying disorder and children are (anecdotally) more difficult to engage in treatment
Autistic Spectrum Disorders, ADHD ^(1,3)			
Moderate / Severe learning problem ^(2,3)			
B. Factors favouring alarm			The child has the maturity and ability to cope with alarm treatment
Negative views of medication			
Arousability: Child relatively easy to wake			Makes initial response to alarm more likely
Home circumstances suitable for alarm			Family supportive and are aware of length of treatment and the possible night -time disruption
C. Factors favouring medication			The child is less able to cope with alarm treatment due to immaturity or physical or mental learning difficulties
Negative views of alarm ⁽³⁾			Alarm less likely to work if family appear reluctant to use/have low expectation of success
Need for rapid response ⁽³⁾			Alarm may take several weeks to show a positive response
Home circumstances unsuitable for alarm ⁽³⁾			Child may share bedroom or sleep in different locations e.g. separated parents having shared care ⁽³⁾

How to use this tool to decide on management

In order to complete the questionnaire you will need to have undertaken a proper clinical assessment of the patient and reviewed the data from a 'bladder diary' (frequency volume chart).

1. Fill in the *Diagnosis* questionnaire – the more questions you can answer the more reliable the assessment.
2. Complete the *Other Factors Affecting Management* questionnaire.
3. If, in a given section, some answers are *Yes* and others are *No*, use your clinical judgement whether to assign them or not.
4. Decide on the optimal management strategy taking into account:
 - a. *Diagnosis* (NB the patient may fall into one or more categories)
 - b. *Other Factors Affecting Management*.

Treatment		
Category	Diagnosis	Implications for treatment
Everyone		1. Fluid intake should be 'normalised'. ^(1,3) (see Legend) 2. Voiding should be optimised. ^(1,3) 3. Constipation should be treated. ^(1,3) 4. Suitable information and advice should be given. ^(1,3)
1 Nocturnal polyuria	PNE with nocturnal polyuria (NB polyuria can be due to abnormal fluid intake)	Always correct fluid intake first. Desmopressin response is better in this group. Response to alarm may be less good – the addition of desmopressin may be helpful. ^(1,3)
2 Bladder storage disorder	Small or overactive bladder	Bladder training is first line for small bladder, anticholinergic medication (e.g. oxybutynin) may be helpful. Addition of desmopressin may improve response rate. Alarm can be used but response rate may be lower.
3 Bladder emptying disorder	Dysfunctional voiding or Structural / neurological disorder	Will need to be referred to specialist service.
4 Negative screen		Alarm response best in this group (monosymptomatic). Desmopressin may be effective but response rate may be less good than in polyuric group. ⁽¹⁾
5 Mixed Screen	PNE with nocturnal polyuria <u>and</u> bladder storage disorder	Best refer to a specialist enuresis clinic (level 2). Combination therapy such as desmopressin combined with anticholinergic medication (e.g. oxybutynin), or alarm combined with desmopressin may be helpful. ⁽¹⁾
Multiple problems on screening		Patients with multiple problems, such as psychiatric or psychological comorbidity, a combination of system abnormalities, or previous treatment failures will be more difficult and will need to be referred to a specialist service.

Legends to the table

1. Formula for Expected Bladder Capacity for children aged 2 to 12 years = (age +1) x 30mls⁽¹⁾. From 13 years of age, Expected Bladder Capacity = 390 mls⁽²⁾. ICCS defines nocturnal polyuria as an overnight urine output of more than 130% of the Expected Bladder Capacity for the age of the child⁽²⁾.
2. NICE⁽³⁾ suggest the following daily fluid intake

Age	Total drinks per day
4-8 years	1000 -1400mls
9-13 years	1200 – 2300mls
14-18 years	1400 – 3200mls

 There is, of course, considerable variability from day to day and between individuals. This volume should be considered the target intake for children with bedwetting, aiming to take most of the fluid during the morning and early afternoon.
3. Bladder scans for post-void residuals and uroflow are not necessary if bladder diary and symptom screen are negative. They are useful in investigation of children with refractory enuresis or with bladder disorder⁽¹⁾.

Treatment failures

The management of “treatment failures” has to be individualised and will often involve treatment that is not well evidenced. Try to identify the reason for failure – was it non adherence, lack of support, due to psycho-social factors or because of ineffective treatment. The views of the child and parents about the treatment are very important.

Children who fail to respond to appropriate management may need referral to a specialist depending on the reasons for failure.

Do a detailed evaluation and manage according to the CMT if not already done, ensuring good support and supervision.

Consider psychological / psychiatry input if co-morbidity factors present.

Consider combination therapy depending on the underlying pattern of wetting:

- If medication is used titrate dose up to maximum license dose (under close supervision) ⁽¹⁾
- If nocturnal urine output exceeds measured bladder capacity consider adding desmopressin to either the alarm or oxybutynin ⁽³⁾
- For children with high frequency of wetting and behavioural symptoms, combination therapy with desmopressin and alarm (limited to 6-12 weeks) may be effective ^(1,3)
- If bladder capacity is normal and desmopressin or the alarm has not worked alone, consider desmopressin + alarm, desmopressin + oxybutynin or alarm + oxybutynin ⁽¹⁾

References:

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- 4) Butler R and Holland P. The three systems: a conceptual way of understanding nocturnal enuresis. *Scand J Urol Nephrol* 2000;**34**:270-7
- 5) Nelson Textbook of Pediatrics, 17th edition: Behrman R. Published by Saunders, June 2004

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